

file format, for the primary purpose of preventing ZipGraph from achieving file compatibility with the incumbent UGraph product.

### **C. Product Pre-Announcements**

In my parable, the incumbent allegedly employed the so-called "vaporware" tactic of strategically making "early" announcements of new releases, with the express purpose of freezing consumers in place to prevent them from buying software offered by the entrant. Product pre-announcements can indeed influence consumer expectations, and thus can have powerful effects in network industries. There should be no doubt that firms in network industries can often benefit by announcing their products in advance.

Complex antitrust issues may arise because such pre-announcements can serve a variety of purposes: they can inform partners of new products to promote interoperability, they can inform consumers of new products so they will not be left stranded buying inferior or obsolete products, they can favorably influence expectations to help establish new products, and, yes, they can deter the introduction of rival products. An investigation to determine the facts in any given case will be necessary in order to conclude that a given pre-announcement was anticompetitive. However, if our investigation were to reveal that a product pre-announcement by an incumbent network monopolist was designed principally not to convey useful information to the buying public but rather to manipulate expectations in a manner inconsistent with current

objective information, we might well conclude that the pre-announcement was anticompetitive. Other factors as well, such as whether the party making the announcement has market power in a relevant market, are also highly relevant.

#### **D. Enforcement of Invalid Intellectual Property**

My parable also noted a possible defensive strategy by which an incumbent monopolist undermines the viability of an entrant's product by asserting that the entrant's product infringes upon the incumbent's intellectual property. If the incumbent's assertion is valid, or based in fact, it is hard to see how the assertion can, in and of itself, constitute an antitrust violation. However, as noted in the Intellectual Property Guidelines (Section 6), "Objectively baseless litigation to enforce invalid intellectual property rights may also constitute an element of a violation of the Sherman Act." Such litigation can be especially destructive in network industries if it is part of a FUD (fear, uncertainty, and doubt) strategy that adversely impacts expectations by convincing consumers that the entrant's product will not succeed. An investigation would be indicated to determine whether a party with monopoly power has engaged in such conduct; if the facts indicated that it has, and that competition has been harmed, antitrust liability might well be found.

#### **E. Leveraging**

Once a firm controls an important standard, it may well seek to protect that position, and to extend its control if possible. Indeed,

since technology is so dynamic, the primary method by which today's network monopolist can maintain its monopoly may well be to extend its control, at least in part, to the next generation of technology. For example, Sony and Philips have sought a key role in defining the standards for digital video discs, building on their control over audio disc standards. Likewise, video game manufacturers have historically tried to migrate their customers from one generation to the next.

In some cases, the leader in one generation of technology is able to perpetuate its dominance into the succeeding generation by offering the best technology to users; this represents healthy competition. But antitrust concerns quickly arise when a firm controlling the standard in one product area uses its dominance to set and control the standard for the next generation of that product, or for a second, complementary product. This leveraging strategy includes situations where a firm controlling one product incorporates a second product into its offerings and extends its control to that second product.

At this point in my talk, it should be pretty clear why an incumbent firm controlling the standard for Product A enjoys a big advantage in establishing the standard for Product B, where Product B either complements Product A or replaces it, assuming that both products are subject to genuine network effects. First, the incumbent firm may enjoy some advantages flowing from vertical integration, allowing it to offer a version of Product B that works especially well

with the A-standard, at least for some period of time. Second, since many of the target consumers for Product B are those already using Product A, the firm controlling Product A may be especially well-placed to obtain distribution for Product B. Third, the incumbent controlling Product A may be the commercially "obvious" choice to set the B-standard, which can tilt expectations dramatically in its favor. Even if rivals are able to coordinate to offer their own standard for Product B, consumers may still expect the A-incumbent to win, and thus it often will win, by the now-familiar positive feedback endemic to networks.

However, these advantages by no means imply that the monopolist controlling the A-standard *necessarily* will become dominant in the market for Product B. To the contrary, in many industries dominant firms fail to match the innovative efforts of others who are offering complementary or successor products, and consequently see their market positions erode. The Antitrust Division is dedicated to making sure that such competition on the merits is not stifled by dominant incumbents. For example, we are prepared to scrutinize and challenge various tactics, from pricing policies to bundling, that are employed by incumbents who are dominant in one market, if these policies are likely to lead to dominance in adjacent markets as well.

The extension of monopoly power from one market to the next through control of standards and networks is one of the most

important battle grounds today and tomorrow for antitrust law. I cannot stand before you today and give you simple, clear guidance that you can use to counsel your clients, uncluttered by the necessarily complex facts specific to your industry or your company. My goal is more modest: to help provide a coherent framework for thinking about antitrust in network industries, to communicate as best I can how we think about these problems, to explain some of the enforcement actions the Antitrust Division has taken recently in these industries, and to identify some key questions that we, the FTC, or the courts may soon have to address.

In some cases, the generic leveraging strategy can be viewed for antitrust purposes in terms of tying. Suppose, for example, that a firm owning patents critical to the current generation of technology licenses those patents only to users who agree also to adopt the firm's proprietary version of the *next* generation of technology. Through such tying, the firm could use its control of the current generation of technology to create an installed base of users who have adopted its proprietary version of the next generation of technology. This might be attempted in conjunction with penetration pricing, by giving the new technology away to certain key users in exchange for their agreement not to use rival standards. In this fashion, today's standard-bearer might be able to extend its control into the next generation of technology. The Antitrust Division could well challenge conduct fitting this fact pattern.

To give another example of how a firm controlling one standard might be able to employ bundling to extend the scope of its control, suppose that the owner of a current proprietary product standard bundles a new product with its standard-bearing product. The firm's goal in bundling might well be to establish a *de facto* standard for the new product, under the firm's control, or to extend the original product and standard to encompass the new product. The firm might well choose to give the new product away for free, planning to capture its revenues later once a new *de facto* standard is established under its control. At the very least, rivals selling the new product must be alert to this ploy and be prepared to respond promptly to the bundling strategy. As I have already noted, this conduct could give an enormous advantage in the new market to the incumbent standard bearer, in part because of that firm's powerful name, in part because of superior interoperability, and in part because the firm's new product would enjoy rapid and widespread distribution. Whether this bundling ultimately benefits or harms consumers and competition requires a further, fact-intensive analysis on a case-by-case basis.<sup>14</sup> If the facts showed that the bundling harmed consumers by monopolizing or threatening to monopolize the market for the new product, the Antitrust Division would likely challenge this conduct.

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<sup>14</sup>As noted above, there could well be consumer benefits associated with the joint supply of the existing standard product and the new product by the same firm. However, consumers may suffer if the new product standard is proprietary rather than open, and there is always the possibility that the incumbent's new product will succeed even if it is inferior to alternative new products available from other vendors.

## **F. Exclusive Dealing**

The dangers of exclusive dealing in network industries are nicely illustrated in the video game industry.<sup>15</sup> Nintendo dominated the video game market during the late 1980s, in no small part because it had developed a superior new product and employed brilliant marketing. Nintendo sold video game machines and developed a number of games internally, including the hit game Mario Brothers, but relied on outside developers for many of its games. As a condition for an independently-developed game to be allowed to play on Nintendo machines, Nintendo required that the game not appear on the rival systems sold by Atari and Sega for a two-year period.

Without delving into the details of that case (and Nintendo certainly offered a number of justifications for this practice), or laying out the steps in the economic analysis of exclusive dealing, let me simply point out how the network elements in the video game industry affect the antitrust analysis of Nintendo's exclusive dealing provision with game developers: Once Nintendo had a large installed base, it became very costly for developers of hit games to forsake the installed base of Nintendo users in order to make their games available on competing systems. As a result, Nintendo's exclusivity requirement reduced the attractiveness of the Atari and Sega systems, and made it all the more likely that the market would tip entirely towards Nintendo. At some point, consumer expectations

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<sup>15</sup> testified in 1991 on behalf of Atari Corporation in their litigation with Nintendo. Nintendo was not found by the jury to have violated the antitrust laws.

regarding the decline of Atari and Sega (in that generation of systems) became self-fulfilling. In other words, exclusive dealing here affects not only the supply of inputs (hit games), but also consumer expectations, to the benefit of the market leader.<sup>16</sup>

The Antitrust Division had similar concerns in the Electronic Payments Systems (EPS) case. Among other things, the Division investigated a rule adopted by the MAC ATM network (now owned by EPS) that prohibited member banks from participating in other regional ATM networks. Even after MAC dropped this rule, the Antitrust Division was concerned that EPS was preventing small member banks from obtaining ATM processing services, so-called "ATM driving," from independent data processing firms, thereby making it more difficult for these banks to link with rival regional ATM networks. As stated in the Division's complaint filed in March 1994, "Once defendant drives a bank's ATM, defendant can prevent that bank from connecting its ATM to another network. To connect to a network other than MAC, MAC must establish the connection. MAC generally has not provided connections to the ATM networks that would be its strongest competitors." Some recent trade press indicates that since the decree a number of rival networks have made inroads into MAC's

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<sup>16</sup>It took a new "killer" game, Sonic the Hedgehog, and a new generation of 16-bit machines, for Sega to mount a serious challenge to Nintendo. I find it interesting that after Nintendo dropped its exclusivity requirement, some hit games began to appear on both the Sega and Nintendo systems. Last I checked, the market was experiencing healthy competition between these two systems, with neither firm demanding exclusivity of outside game developers.



area and attribute their success to the decree.<sup>17</sup>

Our August 1995 consent decree with FTD, the floral delivery network, further illustrates these principles. FTD had required its member florists to be exclusive back in the 1950s, leading to a 1956 consent decree in which FTD agreed not to exploit its dominant position in floral wire services to induce florists to forego membership in competing wire associations. In January 1995, FTD introduced an incentive program, known as "FTD Only," to induce florists to use FTD floral wire services exclusively. This program provided financial incentives to qualifying FTD members. To qualify, a florist was required to terminate its membership in competing wire clearinghouses and clear 100% of its flowers-by-wire orders through FTD's clearinghouse. Over 750 florists had done this by May 1995. FTD agreed last August to terminate its "FTD Only" program. The consent decree states that FTD is "enjoined and restrained from offering any financial incentives or financial rewards to any FTDA member or user of the FTDI clearinghouse that are conditioned upon terminating or forgoing membership or participation in any competing wire association, or other entity or mechanism that transmits or facilitates wire orders."

Finally, the Antitrust Division is prepared to challenge a dominant firm's contracts with its customers or suppliers if these contracts have

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<sup>17</sup>See specifically "EPS Hires Dealmaker to Oversee Aggressive Expansion Strategy," in the *American Banker*, August 8, 1995, indicating that several third-party processors had been certified to drive the terminals of MAC customers.

the same economic effect as would exclusive contracts, even if the exclusivity is not explicit. Microsoft's per-processor licenses, the subject of the Department's 1994 consent decree with Microsoft, fell into this category, because they had the economic effect of inducing OEMs to deal exclusively with Microsoft.

### **G. Mergers with Installed Bases**

What about mergers and acquisitions in network industries? As usual, the 1992 Merger Guidelines provide a valuable starting point. But it is worth pausing to discuss how some of the unique aspects of network industries affect merger analysis. I shall illustrate my points by analyzing mergers in the computer software industry.<sup>18</sup>

First, claims that entry is easy will not necessarily protect computer software mergers from antitrust challenge, for those claims are not necessarily valid. The fact is, in a number of software categories, on a variety of hardware platforms and operating systems, market shares show some stability over time and incumbents have shown the ability to hold on to their market share. Please don't argue that six programmers could write the necessary code in one year so

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<sup>18</sup>I confine my attention here to computer software mergers, in large part because most of my own personal merger experience in network industries has involved computer software. I should note, however, that the Division also regularly reviews telecommunications, railroad and electricity mergers, each of which involves networks. A serious discussion of mergers in these industries will have to wait for another day, along with a discussion of antitrust in *regulated* network industries. Indeed, many readers will note that I am only able to scratch the surface here regarding computer software mergers themselves.

your client's merger must be just fine. The bit about the programmers may be true, but we still need to know whether consumers will switch to the program they have written in response to a modest discount. The fact is, no matter how good the programmers are, they cannot build up an *installed base* overnight, and an installed base is a key attribute affecting the attractiveness, and even the viability, of software programs.

Indeed, our recent experience with software mergers has taught us that entry into computer software is not nearly as easy as the merging parties would have us believe. In the Microsoft/Intuit case, both Microsoft's own experience with Microsoft Money, and Computer Associate's experience with Simply Money, showed how hard it is to successfully establish a new personal financial software product. Despite Microsoft's obvious advantages, and despite the fact that Computer Associates offered large numbers of copies of Simply Money at very low prices, neither was able to make significant inroads into the market. In the Computer Associates/Legent merger, we found that substantial programming resources would be required over a significant period of time to write new security software, tape management software, disk management software, job scheduling software, and automated operations software, for IBM mainframe computers. In that case, entry was especially difficult because these types of software are "mission critical," making it more difficult for an entrant to convince users to accept an untested product.

If entry is indeed difficult, horizontal mergers in computer software have much in common with other mergers involving branded goods. The fact that consumers bear costs in switching from one brand to another is a form of brand loyalty, and suggests that the demand facing each brand is relatively inelastic. The conclusion that each brand of software faces relatively inelastic demand is consistent with the very high gross margins observed for computer software generally. These high gross margins make it more likely that a merger of rival brands will lead to a significant post-merger price increase.<sup>19</sup> In addition, product repositioning by brands already in the market may be somewhat harder in computer software than in other branded goods markets, because of the desire to maintain full compatibility with earlier versions of the product.

This is a good point to discuss the measurement of market shares in computer software mergers. In particular, what is the relevance of installed-base figures, and what is the relevance of new shipments data? The primary measure of market share should be new shipments data, using either units or dollars. New shipments tell us about the current market presence of each brand. To interpret these shares, it is important to account for the fact that shipment shares typically shift

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<sup>19</sup>My November 1995 speech "Mergers with Differentiated Products," explains why high gross margins, *ceteris paribus*, imply larger post-merger price increases, assuming there is significant direct pre-merger competition between the merging brands. A revised and expanded version of this speech is just about to appear in the *Antitrust* magazine.

as new products and upgrades are released. What about the installed bases? These are absolutely crucial strategic variables: a brand with a large installed based is attractive, both because of the now-familiar advantages associated with a popular product in a network industry, and because brands with large installed bases are, *ceteris paribus*, expected to remain popular, and expectations tend to be self-fulfilling in network markets. For all of these reasons, we often see brands with large installed bases enjoying the lion's share of new shipments, including both upgrades and new sales. If, however, this correlation between prior sales (installed base) and current sales is absent, that is a signal that the installed bases are, for some reason, less important in assessing current competitive conditions.

Computer software is much like an extremely durable capital good: once a consumer owns the program, that consumer has little reason to make further purchases unless the product is improved (or unless the consumer adds new machines). As a consequence, the supplier of a computer software program has a considerable incentive to improve its product simply to make sales to its own installed base, i.e., to drive sales of upgrades. Thus, for programs with large installed bases relative to new shipments, competition with other programs may not be the primary driver of product improvement, especially if users find it very costly to switch brands.

This same logic does not apply to pricing competition. Rather, there may be substantial pricing competition, either in the form of

competitive upgrades to attract consumers from rival programs' installed bases, or to attract new, unattached customers. This competition can be especially intense if rival brands are jockeying to take the lead in terms of installed base, perhaps with the hope of tipping the market in their favor. Competition of this type would be lost due to a merger of the competing programs.

One way to gauge competition is to look at what happens when a new version of one computer program is introduced. Assuming the new version offers significant new capabilities, its introduction causes a sudden increase in performance, which is comparable to a sudden drop in price. These episodes offer an excellent opportunity to measure the extent of direct competition between the two brands of software, as captured by the Diversion Ratio between the two merging brands.<sup>20</sup>

Rather different issues arise when evaluating vertical mergers in the computer industry. As I noted above, vertical cooperation, including vertical integration, can be beneficial to consumers. For example, if a hardware vendor acquires a software supplier, this merger of complements can well lead to lower overall prices for the combined hardware and software "system." But vertical mergers also

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<sup>20</sup>For an extended discussion of how the Diversion Ratio is defined and used to assess unilateral competitive effects in differentiated-product mergers, see my November 1995 speech, "Mergers with Differentiated Products," or my forthcoming article in the *Antitrust* magazine.

raise issues of foreclosure.<sup>21</sup> In a hardware/software merger, the Antitrust Division will investigate to determine the impact of the merger on competition in both the hardware and the software markets.

The recent acquisition of two software firms, Alias and Wavefront, by hardware manufacturer Silicon Graphics raised both horizontal and vertical issues.<sup>22</sup> Both Alias and Wavefront write sophisticated, high-end graphics software, largely for Silicon Graphics workstations. Alias and Wavefront competed directly with each other, suggesting that a merger between the two of them alone would have led to a reduction of competition. However, my analysis showed that Silicon Graphics, because of its strong financial interest in making hardware sales, in fact had an incentive to *lower* the overall hardware/software system price after the acquisition, so long as the purchase would not hinder the ability of other hardware/software *systems* to compete with the Silicon Graphics system. The FTC consent decree dealt with this latter concern by requiring Alias to "port" some of its key software products to a competing hardware platform.<sup>23</sup>

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<sup>21</sup>For a more complete discussion of vertical mergers, see the speech by then-Deputy Steven C. Sunshine, "Vertical Merger Enforcement Policy," text published May 11, 1995.

<sup>22</sup>Prior to my employment at the Antitrust Division, I consulted for Silicon Graphics in this merger, which was reviewed by the FTC.

<sup>23</sup>In the Matter of Silicon Graphics, Inc., Docket No. C-3626, File No. 951-0064.

Finally, moving beyond computer software to networks generally, let me address the argument that a merger will allow two networks to be joined together, and thus benefit consumers by enhancing network effects. It certainly is possible that the merger will facilitate the linking of the two networks, e.g., by enhancing the compatibility of the two computer programs, or by facilitating the handling of railroad traffic on end-to-end routes. And such enhanced compatibility does indeed count as a consumer benefit. But, as with other merger efficiencies, this leaves open the question of why a *merger* is needed to generate these network benefits. For such benefits to be counted as merger-specific efficiencies, we at the Antitrust Division need to know what prevents the two merging firms from improving the compatibility of their programs, either individually or in cooperation, *without* a full-scale merger.

## **V. Conclusion**

Business strategy in network industries is rich, complex, and exciting. No less so for antitrust policy. Antitrust enforcement in network industries must be informed by the strategic realities of competition in high-tech markets. I feel strongly that economics and business strategy can go a long way to frame antitrust thinking regarding high-technology industries generally and network industries in particular.



I hope I have been able to communicate some lessons for antitrust policy in network industries, based on economic principles. In a nutshell, our attention must be on preserving technological competition, we must recognize the myriad benefits of cooperation among market participants, we must pay careful attention to compatibility and expectations, and we must be ever vigilant to prevent firms from extending their control of one product or standard to another, except by providing the best value to consumers. Sound and alert antitrust enforcement in these industries is necessary to protect competition and innovation.

My goal here has been to offer an economic framework for antitrust enforcement policy in network industries, and to place several important antitrust cases into this framework, including but not limited to enforcement actions by the Antitrust Division. If I have done my job well, my remarks here will help clarify how we at the Antitrust Division are likely to analyze a variety of matters involving network industries.

Thank you for your attention and your patience.